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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/760,084	01/16/2004	Mikiko Abe	71801 CCD	1283

7590 08/03/2006

c/o Cooper & Dunham LLP
1185 Ave. of the Americas
New York, NY 10036

EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 08/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/760,084

Applicant(s)

ABE ET AL.

Examiner

Martin J. Angebrannt

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/16/04, 5/3/04 & 2/3/05.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1/16/04, 2/3/05</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-11 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Deguchi et al. '857.

Example 1 teaches a substrate with a 0.74 micron pitch groove coated with a 65 nm ZnS-SiO₂ lower protective layer, a 15 nm Ag_{0.7}In_{2.6}Sb_{71.5}Te_{20.9}Ge_{4.3} recording layer, a 2 nm 77% ZrO₂-3% Y₂O₃-20% TiO₂ upper interfacial layer, a 10 nm ZnS-SiO₂ upper protective layer, a 4 nm Si layer and 140 nm Ag reflective layer. This was initialized with a laser power of 1200 mW at a linear velocity of 9 m/s, a feed of 20 microns/r and the transition linear velocity (crystallization velocity) being 9.5 m/s. (24/60-25/44). The laser beams used was a 75 x 1 micron oval laser beam (area being 58.875 μm², yielding 20.38 mW/ μm²) (24/56). The other examples are initialized under similar conditions. Example 2 has only a 2 nm lower interfacial

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layer of 77% ZrO_2 -3% Y_2O_3 -20 % TiO_2 between the lower protective layer and the recording layer.(25/45-26/15). Example A-3 has a both an upper and lower interfacial layer of 77% ZrO_2 -3% Y_2O_3 -20% TiO_2 with a thickness of 2 nm (2619-67).

4. Claims 1-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Deguchi et al. '857, in view of Maeda et al. '375.

Maeda et al. '375 disclose the initialization of phase change recording media in only the groove or land areas.

It would have been obvious to modify the examples of Deguchi et al. '857 by to reduce the beams size and increase the feed rate to initialize only the groove areas in successive rotations if only the grove areas are to be written upon with the advantage that the initialization is more rapid as only half the medium needs to be scanned by the laser beam.

5. Claims 1-11 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Yuzurihara et al. '447.

Example 1 teaches a substrate with a 0.74 micron pitch groove coated with a 54 nm ZnS-SiO_2 lower protective layer, a 12 nm $\text{Ag}_{0.3}\text{In}_{3.5}\text{Sb}_{72}\text{Te}_{20.4}\text{Ge}_{3.8}$ recording layer, a 3 nm 77% ZrO_2 -3% Y_2O_3 -20% TiO_2 upper interfacial layer, a 11 nm ZnS-SiO_2 upper protective layer, a 4 nm SiC layer and 140 nm Ag reflective layer. This was initialized with a laser power of 1300 mW at a linear velocity of 10 m/s, a feed of 36 microns/r and the transition linear velocity (crystallization velocity) being 10 m/s. [0099-0109]. The laser beams used was a 75 x 1 micron oval laser beam (area being $58.875 \mu\text{m}^2$, yielding $22 \text{ mW}/\mu\text{m}^2$) [0109]. The use of interface layer may also be provided between the recording layer and the upper dielectric layer [0069].

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6. Claims 1-4 and 9-11 are rejected under 35 U.S.C. 102(e) as being fully anticipated by Sawada et al. '488.

Example 1 teaches a substrate with a 0.74 micron pitch groove coated with a 60 nm ZnS-SiO₂ lower protective layer, a 3 nm ZrO₂ interfacial layer, a 11 nm Ag₁In₂Sb₇₃Te₂₀Ge₄ recording layer, a 14 nm ZnS-SiO₂ upper protective layer, a 4 nm SiC layer and 140 nm Ag reflective layer. This was initialized with a laser power of 1300 mW at a linear velocity of 11 m/s [0055-0058]. The laser beams used was a 75 x 1 micron oval laser beam (area being 58.875 μm^2 , yielding 22 mW/ μm^2) [0058].

7. Claims 1,10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebina et al. JP 10-055539 (machine translation enclosed), in view of Nobukuni et al. '407 or Harigaya et al. EP 1260973.

Ebina et al. JP 10-055539 in example 1 teaches a grooved substrate coated with a 150 nm ZnS-SiO₂ lower protective layer, a 25 nm Sb₂Te₅Ge₂ recording layer, a 50 nm ZnS-SiO₂ upper protective layer, a 100 nm Al reflective layer [0016]. This was initialized with a power density of 17.5 mW/ μm^2 at a linear velocity of 8.0 m/s with an advance of 48 microns. [0017]. . The laser beams used was a 100 x 1 micron oval laser beam (area being 78.5 μm^2 [0017]. The use of the medium at velocities of 8.4 m/s is disclosed. [0017]. The use of velocities of 3-12 m/s is disclosed/ [0009]. The use of power densities of 7.5-20 mW/ μm^2 is disclosed [0010]. The use of various phase change recording layers including InSbTe and GeTeSb recording layers is disclosed [0014]. The power of the laser is

Nobukuni et al. '407 teaches example 1, which has a InGeSbTe recording layer and is initialized at 3-4 m/s and a power of 600-700 mW over an area of 71.4 μm^2 . The power is ~ 9.8

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mW/ μm^2 . [0549]. The use of the medium at 10 times velocity is taught (~ 12.0 m/s). [0556-0572]. The general use of GeTeSb and InGeSbTe recording layers is disclosed [0160,0166,0179].

Harigaya et al. EP 1260973 in example 1 teaches a substrate with a 0.74 micron pitch groove coated with a 68 nm ZnS-SiO₂ lower protective layer, a 16 nm GeMnSbTe recording layer, a 10 nm 77% ZrO₂-3% Y₂O₃-20% TiO₂ upper interfacial layer and a 140 nm Ag reflective layer. [0142-0149]. This was initialized with a laser power of 850 mW at a linear velocity of 3 m/s and a feed of 36 microns/r [0152]. The laser beams used was a 196 x 1 micron oval laser beam and each area was irradiated and average of 5.4 times (area being 153 μm^2) [0152].

It would have been obvious to one skilled in the art to modify the example of Ebina et al. JP 10-055539 by using other phase change recording layer composition and thicknesses, such as those taught by Nobukuni et al. '407 or Harigaya et al. EP 1260973 with a reasonable expectation of being able to initialize the media at velocities of 8-12 m/s at power densities of 15-20 mW/ μm^2 .

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

EP 1058248 is the equivalent of 09/585380

EP 1058249 is the equivalent of 09/569501

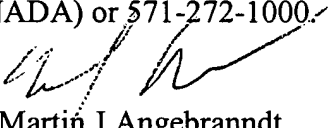
JP 1058248 is the equivalent of 09/534183

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebrannndt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Martin J Angebranndt
Primary Examiner
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07/31/2006